

the country and of the world, can be effected by the Association for the Advancement of Science through the recognition of such specialization as spontaneously occurs, through grants for the solution of particular problems, and through assistance in finding adequate publication for the results that may be obtained from engineering researches.

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REPORT OF THE SUBCOMMITTEE ON PATHOLOGY

THE Committee on Research in Pathology recommends:

1. *Nature of Work to Be Aided.*—In the awarding of grants that preference be given to problems of etiology, immunity, functional pathology and chemical pathology, as representing the most profitable lines of investigation at present.

2. *Laboratories or Individuals to Be Aided.*—It is believed advisable to give grants preferably to laboratories presided over by a director of known training and ability in investigation, the funds of which are insufficient to meet the needs for special studies. This does not necessarily rule out an exceptional man in a laboratory indifferently manned, but it must be remembered, as a general proposition, that laboratories which need the money most are, on account of poor equipment and the lack of adequate staff, least prepared to use it to advantage. The best policy is to give where most can be accomplished and not where money is most needed.

It is undesirable to give money solely to encourage research in a general way by younger men under direction of the laboratory head. The aid should be for a definite problem of recognized importance and should be preferably to men of wide experience as investigators, and as far as possible to heads of departments, who will take an active part in the work, aided perhaps by their assistants.

In addition to departments of pathology, those of bacteriology, protozoology and immunology, or clinical medicine possessing well-equipped laboratories for investigation along any of the lines before mentioned shall be

considered as conducting research in pathology and eligible for grants. The sole conditions for the award of a grant should be (1) The formulation of a suitable problem; (2) the proposal of definite methods for its solution; (3) the possession of facilities adequate for the successful prosecution of the projected investigation.

3. *Amount of Grants.*—In view of the position taken in Section 2 it is recommended that grants of relatively large sums (several hundred dollars) be given to a few laboratories rather than smaller sums scattered more widely. These larger sums would ensure, presumably, an adequate return and would offer a greater incentive to concentrated work on important problems.

4. *Cooperation.*—It is considered desirable for the committee to keep in touch with other organizations, as the Rockefeller Institute for Medical Research and the Research Committee of the American Medical Association, offering grants for research in medicine in order (a) to avoid duplication of grants, (b) to exchange lists of applicants, (c) to profit by the experience of these organizations.

5. *Publicity.*—It is considered inadvisable to issue a general request for applications. The publication in *SCIENCE* and the *Journal of the American Medical Association* of the report of the committee should place the matter before the proper audience and lead to requests from individuals, presumably heads of departments most interested in such aid and best prepared to take advantage of it.

THEODORE C. JANEWAY,

EUGENE L. OPIE,

H. GIDEON WELLS

RICHARD M. PEARCE (chairman),

University of Pennsylvania,

Philadelphia, Pa.

PEYTON ROUS (secretary),

Rockefeller Institute,

New York City

REPORT OF THE SUBCOMMITTEE ON MATHEMATICS

In view of the proposed plan to form research committees with the direct cooperation of various scientific organizations, the

subcommittee on mathematics decided not to attempt to present a formal report at this time. I desire, however, to take advantage of this opportunity to emphasize the fact that mathematical research is probably no less dependent upon financial support than research in the other scientific subjects.

It is true that the mathematical investigator seldom needs costly equipment beyond good library facilities, but what he gains in this direction he loses as a result of the fact that his most important discoveries frequently require very extensive development before they are fully appreciated even by the mathematical public. In some scientific fields discoveries of the greatest popular interest can be announced effectively in a few words, and hence the publications necessary to meet the direct needs of the investigator in these fields are comparatively inexpensive.

The lack of funds for the publication of extensive mathematical treatises and memoirs has had very baneful consequences. In the case of treatises on modern subjects the scientific value often increases much more rapidly than the size of the treatise. If an author who is perfectly competent to prepare a treatise of six hundred pages on such a subject is compelled to limit himself to four hundred pages, he usually finds it necessary to omit the developments which are most original and which would reflect most honor on the author and on the country in which the work is published.

The intrinsic scientific value of mathematical memoirs is usually not very seriously affected by brevity in presentation. On the other hand, this brevity tends to reduce the immediate influence of these memoirs, since it increases enormously the difficulties met by those who try to master them. The mathematical reader is often compelled to waste much time in trying to decipher what the author could have exhibited clearly if he had had a few more pages at his command. As compared with European publications American mathematical literature includes a comparatively small number of extensive memoirs.

The most expensive element tending to im-

prove research conditions is the providing of sufficient free time for the investigator. In this respect mathematics does not present a problem which differs materially from that presented by other subjects, unless it is assumed that the very abstract nature of his subject makes it unusually difficult for the mathematician to utilize odd moments. At any rate, I hope I have succeeded in making clear that American mathematical research could be greatly improved by more liberal financial support, and I presume the importance of mathematical developments needs no emphasis before a body of scientists.

G. A. MILLER,
Chairman

SCIENTIFIC NOTES AND NEWS

DR. J. H. LONG, dean of the school of pharmacy and professor of chemistry at Northwestern University, has been elected president of the Chicago Institute of Medicine for the year 1917.

THE Royal Geographical Society of London has elected Dr. Charles Doolittle Walcott, secretary of the Smithsonian Institution, a corresponding member.

DR. J. J. R. MACLEOD, professor of physiology, school of medicine, Western Reserve University, has been granted leave of absence to act as professor of physiology in McGill University, Montreal, during the months of February and March.

PROFESSOR WALDEMAR LINDGREN, of the Massachusetts Institute of Technology, has gone to Chile in connection with geological work on some of the copper properties.

THE honor of knighthood has been conferred on Professor Jagadish Chandra Bose, of Calcutta, known for his work in physics and physiology.

PROFESSOR A. N. WHITEHEAD has been elected president of the British Mathematical Society.

MAJOR P. A. MACMAHON has been elected president of the Royal Astronomical Society in succession to Dr. R. A. Sampson.

DR. SMITH ELY JELLIFFE, of New York City, has been appointed editor of the *New York*